European Patent Office

SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 94 92 1537

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-4 405 337 (YANMAR DIESEL ENGINE CO) * claims 1,2,4 * * column 2, line 52 - line 54 * * column 2, line 62 - line 64 * * examples 1-6 * -----	1,2,4,7, 13, 15-18,20	C10L1/02 C10L1/10 C10L1/18

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

C10L

The supplementary search report has been drawn up for the claims attached hereto.

Place of search	Date of completion of the search	Examiner
THE HAGUE	6 June 1996	De Herdt, O

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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The claims defining the invention are as follows:

1. A fuel blend composition including a hydrocarbon liquid as hereinbefore defined, up to 20% of the total composition of ethanol and/or n-propanol and up to 15% by volume of the total composition of a fatty acid and/or organic ester.

2. A fuel blend composition according to claim 1 wherein the fatty acid and/or organic ester component is between 1.5% - 11% by volume of the total composition.

3. A fuel blend composition according to claim 1 wherein the fatty acid and/or organic ester component is between 2% - 5% by volume of the total composition.

4. A fuel blend composition according to any of claims 1 to 3 wherein the fatty acid is derived from natural oils and fats or vegetable oils or is produced by synthetic means or any mixtures thereof.

5. A fuel blend composition according to claim 4 wherein the natural oils and fats are lard and tallow.

6. A fuel blend composition according to claim 4 wherein the vegetable oils are derived from canola, palm, corn, sunflower oil or soya bean oils.

7. A fuel blend composition according to any of the claims 1 to 3 wherein the organic ester is selected from fatty acids, aromatic esters and/or aliphatic esters and any mixtures thereof.

8. A fuel blend composition according to claim 7, additionally including a dicarboxylic acid ester.

9. A fuel blend composition according to claim 7 wherein the fatty acids are selected from ethyl oleate, methyl oleate, ethyl tallowate, iso-propyl oleate, butyl oleate, methyl oleate or methyl cocoate.

10. A fuel blend composition according to claim 7 wherein the aromatic esters are selected from butyl benzoate and ethyl acetate.

11. A fuel blend composition according to claim 7 wherein the dicarboxylic acid ester is dioctyl maleate.

12. A fuel blend composition according to any of the previous claims further including methanol, iso-propanol, butanol, iso-butanol, tertiary butanol and mixtures thereof.

13. A fuel blend composition according to any of the previous claims wherein the hydrocarbon liquid is at least 40% by volume of the total composition.

14. A fuel blend composition according to any of the previous claims wherein the hydrocarbon liquid is between 75% - 85% by volume of the total composition.

15. A process for producing a single phase fuel blend composition according to any one of claims 1 to 14 including the steps of:

a) adding the ethanol and/or n-propanol alcohol to the hydrocarbon liquid to form an alcohol phase and an oil phase; thereafter

(b) adding the mixture of step (a) to the fatty acid and/or organic ester ; and

(c) mixing the resultant mixture until a single phase is formed.

16. A process for producing a single phase fuel blend according to any one of claims 1 to 14 including the steps of:

(a) adding the ethanol and/or n-propanol to the fatty acid and/or organic ester; thereafter

(b) adding the mixture of step(a) to the hydrocarbon liquid ; and

(c) mixing the resultant mixture until a single phase is formed;

17. A fuel blend composition as hereinbefore described by reference to any of the examples.

18. A fuel additive composition including ethanol and/or n-propanol and a fatty acid and/or organic ester in respective amounts ranging from a ratio of 25:1 to 1:1.

19. A fuel blend composition including the hydrocarbon liquid and up to 35% of the fuel additive composition as in claim 18.

20. A fuel additive composition as hereinbefore described by reference to any of the examples.